LVLØ

ULTIMATE POOL CONTROLLER BY ISA

LVLØ – KNX INTEGRATION MANUAL

PLUG & POOL™

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1 Safety information

1.1 Safety instruction

Electrical equipment may only be installed and fitted by electrically skilled persons.
The country specific regulations and the valid guidelines must be followed.

Failure to observe the instructions may cause damage to the device and result in fire and other hazards.

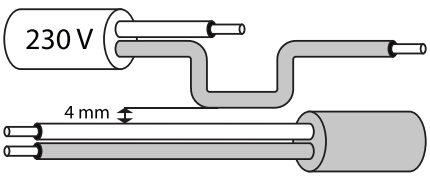
Do not connect any external voltage to the inputs. Doing so may damage the device(s).

1.2 Information for electrically skilled person

DANGER!
Electrical shock when live parts are touched. Electrical shocks can be fatal.

Before working on the device, disconnect the power supply and cover up live parts in the working environment.

Safety clearance must be guaranteed in accordance with IEC 60664--1.
There must be at least 4 mm between the individual cores of the 230 V supply cable and the KNX line.



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2 Overview

You can use these instructions to integrate LVLØ to an existing KNX network and to create visualization of pool equipped with this device. LVLØ communication objects are divided into three groups. This division is based on LVLØ mobile application concept.

NOTE:

- Group addresses are managed by the manufacturer.
- No. of group addresses and associations is 52.

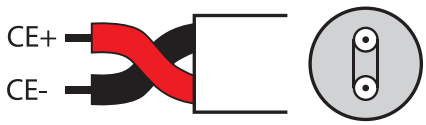
WARNING:

- This document does not provide guidance for device commissioning.
- It is necessary to perform complete setup of LVLØ to ensure that LVLØ controller will work as expected.

3 KNX and LVLØ

This document contains specific information applicable to the European Tool Set (ETS) only.
S-mode communications are not dealt with here.

The KNX Association has its headquarters in Brussels and is an organization or association of manufacturers which maintains the KNX standard and develops it further. The KNX Association supports the trend towards the "smart home", in which the various building services including lighting, heating, security systems and other - all communicate on the same network. Building control technology as provided by KNX is a specialized form of automated process control, dedicated to the needs of home and building applications. One premise for KNX is to furnish a radically decentralized, distributed approach; hence the term network
The KNX bus enables the LVLØ to communicate with each other, i.e. to exchange process values and system data in LTE mode (LTE = Logical Tag Extended).
LTE mode (LTE = Logical Tag Extended) is characterized by the assignment of zone addresses (logical tags) to create communications bindings for the exchange of process values. Device with the same zone address exchange process values with each other, one zone address being capable of transmitting the values of many data points.
The KNX bus used with LVLØ is referred to as "KNX TP1". A full-scale KNX network is a three-level structure consisting of one area line, from which 15 main lines branch off. A further 15 lines can branch off from each main line. A network consisting of main lines and lines requires area and line couplers. If no area and line couplers are used, the network is restricted to one line. Permissible bus topologies are tree, line and star topologies. These topologies can be mixed as required. However, ring topologies are not allowed. The tree topology has advantages over other topologies in cases where a large network has to be created.
The bus cable comprises two twisted conductors, CE+ (red) and CE– (black).



Unshielded bus cables are permitted for the KNX bus in conjunction with LVLØ device. However shielded bus cables are recommended, if high interference is anticipated.
The KNX bus uses CSMA/CA (CSMA = Carrier Sense Multiple Access / CA = Collision Avoidance) to access the bus. With this method of access every bus user has equal data transmission rights. There is no communication master (in contrast to the master/slave principle). The data is exchanged directly (peer-to-peer) between bus users.

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3.1 Electrical connection

To enable KNX on LVLØ, connect a Twisted Pair cable which fulfils the KNX requirements (e.g. YCYM 2×2×0.8 or J-Y(St)Y 2×2×0.8 in TP1 design) to the KNX bus connector. When installing a standard cable, the following conditions apply:

+ (plus) – Red wire - (GND) – Black wire
For detailed specification refer to **SERVICE MANUAL**.

NOTE:

- Insulated wire cores of sheathed mains cables and KNX TP1 bus cables may be installed next to each other without any clearance space. A minimum clearance space of 4 mm must be observed between the insulated wire cores of KNX TP1 bus cables and those of sheathed mains cables. Alternatively, the wire cores must be provided with an equivalent insulation, such as a spacer or insulation sleeving (DIN VDE 0110-1, Basic insulation). This also applies to wire cores of other cables that are not part of SELV/PELV circuits.

- Terminating resistor is not required.

3.2 Configuration

This application offers a wide range of setting options in order to execute numerous functions with a KNX pushbutton and controlled KNX devices like touch panels, etc. Or use pool functions in KNX scenes.

You will find an overview of all the functions, parameters and the related adjustable values in the “Group addresses parameters and settings„section.

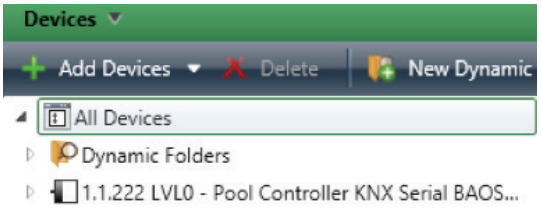
All 1-bit writable communication objects need to be triggered by 1 bit pulse edge function (send telegram 1 following by 0). If pulse edge “1” / ”0” is detected at the input communication object, the output reacts to it immediately by changing current state and by sending a status telegram.

3.3 KNX network address

The network address for a full-scale KNX network consists of the area, line and device address. It reflects the exact position of a bus device in the overall network and is unique within the network.

NOTE:

The LVLØ Ultimate Pool Controller bus device is factory-set with the KNX defined individual address 1.1.222 and can be changed only via ISA remote support. Please make sure this address is not used in KNX network.



ETS software used for LVLØ is present by KNX Bus Access and Object Server in ETS.

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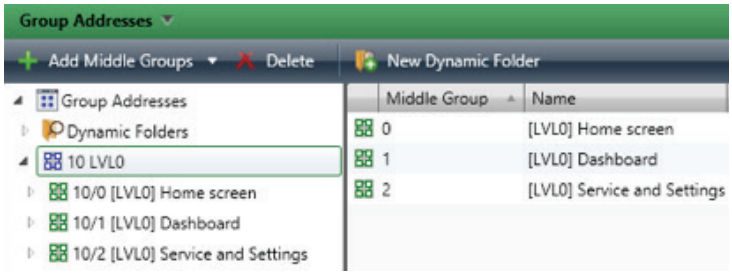
4 Engineering with ETS

4.1 KNX Group Addresses

Communication between devices in an installation is carried out via group addresses.

The group addresses are already assigned to the group objects. When using the ETS engineering tool, e.g. in systems with third-party devices, the ETS project database of LVLØ device must be imported into ETS. Selected data points of the LVLØ device can communicate also in S-Mode.

You can download ETS files from www.lvl0.eu/download/.



NOTE:

Pay special attention to the following design when engineering with ETS:

- **Fixed group addresses are defined in the KNX standard for all system functions.**
- **Group address are set in the LVLØ bus devices before they leave the factory.**
- **Main group 10, middle group 0 is used for LVLØ application Home screen functions.** Contains all major functions and information's to operate pool equipment like light, cover, auxiliaries and read measured values of water quality and temperature.
- **Main group 10, middle group 1 is used for LVLØ application Dashboard features.** Contains all major information's about condition of pool and pool equipment. Current state of circuit breakers, sensors, buffer tank, etc.
- **Main group 10, middle group 2 is used for LVLØ application Setting functions.** Contains all major functions to control filtration, heating, cooling details about current LVLØ and pool conditions. Status of circuit breakers, pump and valves status, sensor alerts etc.

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4.1.1 10/0/x Communication objects for Home screen and statistics section

Group Address	Data Point Name	Data Point Type				Description
10/0/0	LVL0 Water Temperature Output °C	display of value EIS5	2 Byte	R	9.001	Display actual water temperature. Floating value (°C), cyclically send to bus.
10/0/1	LVL0 Outside temperature Input °C	control EIS5	2 Byte	W	9.001	Control outside temperature from KNX Floating value (°C). **NOTE: Setting via LVLØ mobile app must Settings>-Service>HEATING>outside temperature source is set to "KNX" option.**
10/0/2	LVL0 Outside Temperature Output °C	display of value EIS5	2 Byte	R	9.001	Display actual outside temperature. Floating value (°C), cyclically send to bus.
10/0/3	LVL0 Light Control (Send 1/0)	control pulse edge 1/0	1 bit	W	1.001	Actuator to control "LIGHT" output. Toggle current output status when pulse edge telegram (0/1) will be received on this input. Status feedback will be send when output changes state.
10/0/4	LVL0 Light Status Feedback (1=On, 0=Off)	display of status	1 bit	R	1.001	Status feedback of "LIGHT" output.
10/0/5	LVL0 Pool Cover Control - Open (Send 1/0)	control pulse edge 1/0	1 bit	W	1.001	Actuator to control "POOL COVER" output. Pool cover will open when pulse edge (0/1) telegram will be received on this input.
10/0/6	LVL0 Pool Cover Control - Close (Send 1/0)	control pulse edge 1/0	1 bit	W	1.001	Actuator to control "POOL COVER" output. Pool cover will close when pulse edge (0/1) telegram will be received on this input.
10/0/7	LVL0 Pool Cover Status Feedback (1=Open, 0=Closed)	display of status	1 bit	R	1.001	Status feedback of "POOL COVER" output is send to bus when the output change state. Feedback is send cyclically to bus every 600s.
10/0/8	LVL0 AUX1 Control (Send 1/0)	control pulse edge 1/0	1 bit	W	1.001	Actuator to control "AUX1" output. Toggle current output status when pulse edge telegram (0/1) will be received on this input. Status feedback will be send when output changes state.
10/0/9	LVL0 AUX1 Status Feedback (1=On, 0=Off)	display of status	1 bit	R	1.001	Status feedback of "AUX1" output.
10/0/10	LVL0 AUX2 Control (Send 1/0)	control pulse edge 1/0	1 bit	W	1.001	Actuator to control "AUX2" output. Toggle current output status when pulse edge telegram (0/1) will be received on this input. Status feedback will be send when output changes state.
10/0/11	LVL0 AUX2 Status Feedback (1=On, 0=Off)	display of status	1 bit	R	1.001	Status feedback of "AUX2" output.
10/0/12	LVL0 Current Actual pH Output	display of value EIS5	2 Byte	R	9.*	Display actual pH value. Floating value is send to bus on change or cyclically based on parameter 10/2/15.
10/0/13	LVL0 Current Actual Redox Output mV	display of value EIS5	2 Byte	R	9.020	Display actual Redox/ORP value in mV (-2000 +2000). Value is send to bus on change or cyclically based on parameter 10/2/15.
10/0/14	LVL0 Current Actual Free Chlorine Output mg/l	display of value EIS5	2 Byte	R	9.*	Display actual CLF (Free chlorine) value in mg/l (ppm). Floating value is send to bus on change or cyclically based on parameter 10/2/15.
10/0/15	LVL0 Current External System Temperature Output °C	display of value EIS5	2 Byte	R	9.001	Display actual temperature of external heating/cooling system. Floating value (°C) is cyclically send to bus.

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4.1.2 10/1/x Communication objects for Dashboard section

Group Address	Data Point Name	Data Point Type				Description
10/1/0	LVL0 Service Required Status Feedback (1=Required, 0=OK)	display of status	1 bit	R	1.001	Summarized status feedback object to display if service intervention on pool is required. Telegram is send cyclically to bus every 600s.
10/1/1	LVL0 Service Area Status Feedback (0=OK, 1,2,4=Err)	display of value EIS5	2 Byte	R	7.*	Summarized status feedback object to display service code in case of service is required on pool. Telegram with code is send to bus cyclically every 600s. Code explanation: 1 - water quality long-term (OK/ERR) 2 - technology (OK/ERR) 4 - service intervals (OK/ERR)
10/1/2	LVL0 Circuit Breakers Status Feedback (0=OK, 1,2,4=Err)	display of value EIS5	2 Byte	R	7.*	Summarized status feedback object to display exact service code in case of Circuit breakers failure. Telegram with code is send to bus cyclically every 600s. Code explanation: 1 - dosing breaker failure (OK/ERR) 2 - filtration breaker failure (OK/ERR) 4 - additional technology breaker failure (OK/ERR)
10/1/3	LVL0 Water Treatment Status Feedback	display of value EIS5	2 Byte	R	7.*	Summarized status feedback object to display exact service code in case of water treatment issues. Telegram with code is send to bus cyclically every 600s. Code explanation: 1 - pH (OK/ERR) 2 - ORP/CLF (OK/ERR) 4 - chemical stocks (OK/ERR) 8 - electrodes (OK/ERR)
10/1/4	LVL0 Pump and Valves Status Feedback	display of value EIS9	2 Byte	R	7.*	Display actual status of outputs for "DOSING PUMPS 1 - 4", "FILTRATION", "3 WAY VALVE" and "MAKE UP WATER VALVE". Summarized status telegram is send to bus on change and cyclically every 600s. Code explanation: 1 - filtration pump (ACTIVE/INACTIVE) 2 - dosing pump 1 (ACTIVE/INACTIVE) 4 - dosing pump 2 (ACTIVE/INACTIVE) 8 - dosing pump 3 (ACTIVE/INACTIVE) 16 - dosing pump 4 (ACTIVE/INACTIVE) 32 - heating valve (OPEN/CLOSE) 64 - make up water (OPEN/CLOSE)
10/1/5	LVL0 Buffer Tank Max.Make Up Time Status Feedback (1=ERR, 0=OK)	display of status	1 bit	R	1.005	Status to display issue with filling valve. If max. Make up water safety time is reached, alarm telegram is triggered. Telegram is send cyclically to the bus every 600s.
10/1/6	LVL0 Buffer Tank Max.Make Up Time Reset (Send 1/0)	control pulse edge 1/0	1 bit	W	1.001	Actuator to reset, confirm "Max. Make up time" issue. When pulse edge (0/1) telegram will be received on this input, make up water valve will be again enabled after reaching max. Make up time set by LVLØ mobile application. Counter of make-up water duration will be reset to 0.
10/1/7	LVL0 Buffer Tank Water Level Status Feedback	display of value EIS5	2 Byte	R	7.*	Display actual water level in buffer tank, based on setting in LVLØ mobile application. H1 is on top of the tank, H4 represent the lowest level. Telegram with code is send to bus cyclically every 600s. Exact status codes: 1 - buffer tank (actual utilization) - H1 2 - buffer tank (actual utilization) - H2 4 - buffer tank (actual utilization) - H3 8 - buffer tank (actual utilization) - H4
10/1/8	LVL0 Buffer Tank Safety Status Feedback	display of value EIS9	2 Byte	R	8.*	Display safety messages when processing water in buffer tank. Telegram with code is send to bus cyclically every 600s. Message codes: 1 - dry run protection (ACTIVE/INACTIVE) 2 - forced pumping (ACTIVE/INACTIVE) 4 - make up water (ACTIVE/INACTIVE)
10/1/9	LVL0 Sensors Status Feedback	display of value EIS5	2 Byte	R	8.*	Summarized status feedback object to display sensors status feedback messages. Telegram with code is send to bus cyclically every 600s. Code explanation: 1 - water temperature sensor (OK/ERR) 2 - outside temperature sensor (OK/ERR) 4 - ext. system temperature sensor (OK/ERR) 8 - pH electrode (OK/ERR) 16 - ORP electrode (OK/ERR)

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Group Address	Data Point Name	Data Point Type				Description
10/1/10	LVL0 Regular Service in Day Status Feedback	display of value EIS9	4 Byte	R	14.*	Display days until next regular service, set via LVLØ mobile app. Telegram with value cyclically send to bus every 600s.
10/1/11	LVL0 pH Electrode Service in Day Status Feedback	display of value EIS9	4 Byte	R	14.*	Display days until next service on pH electrode (calibration, replacement), set via LVLØ mobile app. Telegram with value cyclically send to bus every 600s.
10/1/12	LVL0 Redox Electrode Service in Day Status Feedback	display of value EIS9	4 Byte	R	14.*	Display days until next service on Redox electrode (calibration, replacement), set via LVLØ mobile app. Telegram with value cyclically send to bus every 600s.
10/1/13	LVL0 CLF Electrode Service in Day Status Feedback	display of value EIS9	4 Byte	R	14.*	Display days until next service on Free chlorine electrode (calibration, replacement), set via LVLØ mobile app. Telegram with value cyclically send to bus every 600s.
10/1/14	LVL0 UV Lamp Service in Hours Status Feedback	display of value EIS9	4 Byte	R	14.*	Display hours until UV Lamp replacement, set via LVLØ mobile app. Telegram with value cyclically send to bus every 600s.
10/1/15	LVL0 Ozone Generator Service in Day Status Feedback	display of value EIS9	4 Byte	R	14.*	Display days until next service on ozone generator, set via LVLØ mobile app. Telegram with value cyclically send to bus every 600s.
10/1/16	LVL0 Salt Chlorine Gen. Service in Day Status Feedback	display of value EIS9	4 Byte	R	14.*	Display days until next service of salt chlorine generator, set via LVLØ mobile app. Telegram with value cyclically send to bus every 600s.
10/1/17	LVL0 Filtration Service in Day Status Feedback	display of value EIS9	4 Byte	R	14.*	Display days until next service on filtration unit (filter), set via LVLØ mobile app. Telegram with value cyclically send to bus every 600s.
10/1/18	LVL0 Heat Pump Service in Day Status Feedback	display of value EIS9	4 Byte	R	14.*	Display days until next service on heat pump or heat exchanger, set via LVLØ mobile app. Telegram with value cyclically send to bus every 600s.
10/1/19	LVL0 Salt Chlorine Generator Status Feedback	display of status	1 bit	R	1.005	Status to display "SALT GENERATOR" output state. Telegram is send cyclically to the bus every 600s.

4.1.3 10/2/x Communication objects for Settings and Service section

Group Address	Data Point Name	Data Point Type				Description
10/2/0	LVL0 Filtration Pump Control (Send 1/0)	control pulse edge 1/0	1 bit	W	1.001	Actuator to control "FILTRATION" output. Toggle current output state when pulse edge telegram (0/1) will be received on this input. Status feedback will be send when output changes state.
10/2/1	LVL0 Filtration Pump Status Feedback (1=On, 0=Off)	display of status	1 bit	R	1.001	Status feedback of "FILTRATION" output.
10/2/2	LVL0 Filter Cleanup Control (Send 1/0)	control pulse edge 1/0	1 bit	W	1.001	Actuator to control filter cleanup/backwash process. Detailed backwash process can be set via service menu of the LVLØ mobile app. To initiate/start backwash pulse edge telegram (0/1) need to be send to this input. Status feedback will be send when the process is running.
10/2/3	LVL0 Filter Cleanup Status Feedback (1=On, 0=Off)	display of status	1 bit	R	1.001	Status feedback of the filter cleanup/backwash process.
10/2/4	LVL0 Water Temperature Setpoint Input °C	control EIS5	2 Byte	W	9.001	Control water temperature set point from KNX. Floating value (°C) will adjust desired water temperature.
10/2/5	LVL0 Water Temperature Setpoint Output	display of value EIS5	2 Byte	R	9.001	Display actual water temperature set point value. Floating value (°C) is cyclically send to bus every 600s.
10/2/6	LVL0 Water Temperature Setpoint Hysteresis Input °C	control EIS5	2 Byte	W	9.001	Floating value (°C). Control hysteresis of the 2-step heating/cooling controller for water temperature from KNX. Setting rule: Small hysteresis leads to small fluctuations, but frequent switching. Large hysteresis leads to big fluctuations, but infrequent switching.
10/2/7	LVL0 Water Temperature Setpoint Hysteresis Output °C	display of value EIS5	2 Byte	R	9.001	Display actual set point hysteresis temperature. Floating value (°C) is cyclically send to bus every 600s.

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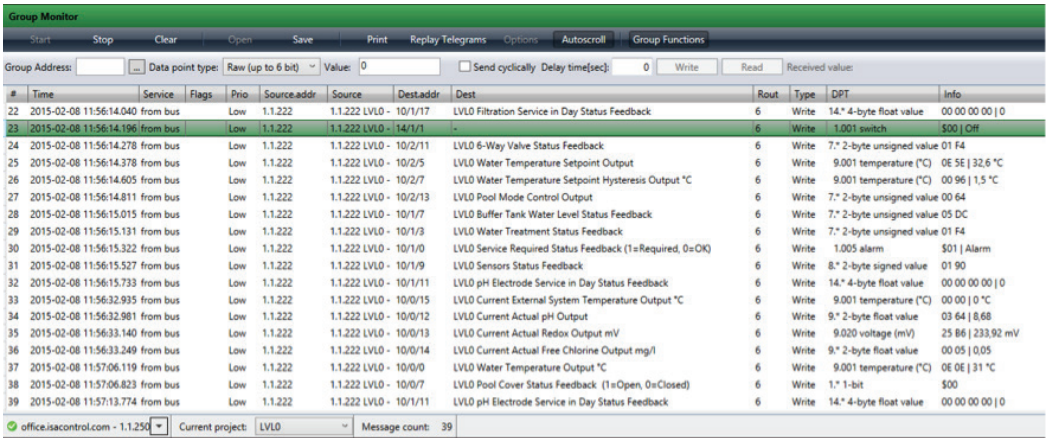
Group Address	Data Point Name	Data Point Type				Description
10/2/8	LVL0 Cooling Enable Control (Send 1/0)	control pulse edge 1/0	1 bit	W	1.001	Actuator to enable/disable water cooling feature. Toggle current output status when pulse edge telegram (0/1) will be received on this input. Status feedback will be send when output changes state.
10/2/9	LVL0 Cooling Status Feedback (0=Disabled;1=Enabled)	display of status	1 bit	R	1.001	Status feedback of the cooling feature output.
10/2/10	LVL0 6-Way Valve Control Input	control EIS5	2 Byte	W	7.*	Control input to switch position of "6 WAY VALVE" outputs. To switch position, send telegram with number of desired valve position: 1 - position closed 2 - position backwash 3 - position recirculate 4 - position waste 5 - position filter 6 - position rinse Actual position will be send via status feedback object.
10/2/11	LVL0 6-Way Valve Status Feedback	display of value EIS5	2 Byte	R	7.*	Display actual position of "6 WAY VALVE" output. Telegram with position is send on change and cyclically every 600s. Position values: 1 - position closed 2 - position backwash 3 - position recirculate 4 - position waste 5 - position filter 6 - position rinse
10/2/12	LVL0 Pool Mode Control Input	control EIS5	2 Byte	W	7.*	Control actual pool mode. To switch mode, send telegram with number of desired mode: 1 - in use 2 - closed 3 - winter NOTE: service mode can be controlled only from device LCD panel
10/2/13	LVL0 Pool Mode Control Output	display of value EIS5	2 Byte	R	7.*	Display current pool mode via status feedback value. Telegram with current mode number is send to bus on change and cyclically every 600s. 1 - pool in use 2 - pool closed 3 - pool winter mode 4 - pool service mode
10/2/14	LVL0 Heating Valve Control (Send 1/0)	control pulse edge 1/0	1 bit		1.001	Actuator to control "3 WAY VALVE" output. Toggle current output state (open/closed) when pulse edge telegram (0/1) will be received on this input. Use this input to control heating valve from master heating system.
10/2/15	LVL0 Minimum Sensors Sending Interval Input (s)	control of value EIS5	2 Byte	W	7.005	Control interval for sending measured values (temperatures, CLF, pH, ORP) to bus. Applies only to sensors.

4.2 Example communication


Group Monitor
Start
Stop
Clear
Open
Save
Print
Replay Telegrams
Options
Autoscroll
Group Functions
Group Address:
Data point type:
Raw (up to 6 bit)
Value:
Send cyclically
Delay time[sec]:
Write
Read
Received value:
Time Service Flags Prio Source.addr Source Dest.addr Dest Rout Type DPT Info
22 2015-02-08 11:56:14.040 from bus Low 1.1.222 1.1.222 LVL0 - 10/1/17 LVL0 Filtration Service in Day Status Feedback 6 Write 14.* 4-byte float value 00 00 00 00 | 0
23 2015-02-08 11:56:14.196 from bus Low 1.1.222 1.1.222 LVL0 - 14/1/1 - 6 Write 1.001 switch $00 | Off
24 2015-02-08 11:56:14.278 from bus Low 1.1.222 1.1.222 LVL0 - 10/2/11 LVL0 6-Way Valve Status Feedback 6 Write 7.* 2-byte unsigned value 01 F4
25 2015-02-08 11:56:14.378 from bus Low 1.1.222 1.1.222 LVL0 - 10/2/5 LVL0 Water Temperature Setpoint Output 6 Write 9.001 temperature (°C) 0E 5E | 32,6 °C
26 2015-02-08 11:56:14.605 from bus Low 1.1.222 1.1.222 LVL0 - 10/2/7 LVL0 Water Temperature Setpoint Hysteresis Output °C 6 Write 9.001 temperature (°C) 00 96 | 1,5 °C
27 2015-02-08 11:56:14.811 from bus Low 1.1.222 1.1.222 LVL0 - 10/2/13 LVL0 Pool Mode Control Output 6 Write 7.* 2-byte unsigned value 00 64
28 2015-02-08 11:56:15.015 from bus Low 1.1.222 1.1.222 LVL0 - 10/1/7 LVL0 Buffer Tank Water Level Status Feedback 6 Write 7.* 2-byte unsigned value 05 DC
29 2015-02-08 11:56:15.131 from bus Low 1.1.222 1.1.222 LVL0 - 10/1/3 LVL0 Water Treatment Status Feedback 6 Write 7.* 2-byte unsigned value 01 F4
30 2015-02-08 11:56:15.322 from bus Low 1.1.222 1.1.222 LVL0 - 10/1/0 LVL0 Service Required Status Feedback (1=Required, 0=OK) 6 Write 1.005 alarm $01 | Alarm
31 2015-02-08 11:56:15.527 from bus Low 1.1.222 1.1.222 LVL0 - 10/1/9 LVL0 Sensors Status Feedback 6 Write 8.* 2-byte signed value 01 90
32 2015-02-08 11:56:15.733 from bus Low 1.1.222 1.1.222 LVL0 - 10/1/11 LVL0 pH Electrode Service in Day Status Feedback 6 Write 14.* 4-byte float value 00 00 00 00 | 0
33 2015-02-08 11:56:32.935 from bus Low 1.1.222 1.1.222 LVL0 - 10/0/15 LVL0 Current External System Temperature Output °C 6 Write 9.001 temperature (°C) 00 00 | 0 °C
34 2015-02-08 11:56:32.981 from bus Low 1.1.222 1.1.222 LVL0 - 10/0/12 LVL0 Current Actual pH Output 6 Write 9.* 2-byte float value 03 64 | 8,68
35 2015-02-08 11:56:33.140 from bus Low 1.1.222 1.1.222 LVL0 - 10/0/13 LVL0 Current Actual Redox Output mV 6 Write 9.020 voltage (mV) 25 B6 | 233,92 mV
36 2015-02-08 11:56:33.249 from bus Low 1.1.222 1.1.222 LVL0 - 10/0/14 LVL0 Current Actual Free Chlorine Output mg/l 6 Write 9.* 2-byte float value 00 05 | 0,05
37 2015-02-08 11:57:06.119 from bus Low 1.1.222 1.1.222 LVL0 - 10/0/0 LVL0 Water Temperature Output °C 6 Write 9.001 temperature (°C) 0E 0E | 31 °C
38 2015-02-08 11:57:06.823 from bus Low 1.1.222 1.1.222 LVL0 - 10/0/7 LVL0 Pool Cover Status Feedback (1=Open, 0=Closed) 6 Write 1.* 1-bit $00
39 2015-02-08 11:57:13.774 from bus Low 1.1.222 1.1.222 LVL0 - 10/1/11 LVL0 pH Electrode Service in Day Status Feedback 6 Write 14.* 4-byte float value 00 00 00 00 | 0
office.isacontrol.com - 1.1.250
Current project:
LVL0
Message count:
39

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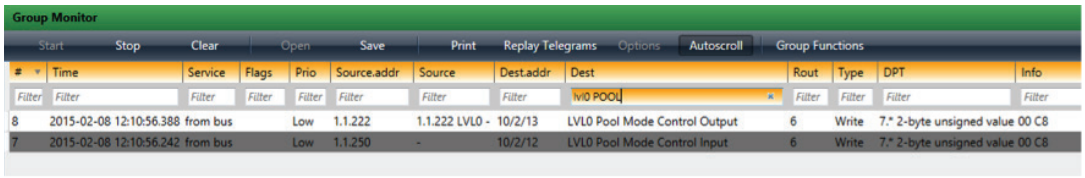
4.2.1 1-bit output control

To trigger LVLØ 1-bit output via KNX bus a toggle from 1 to 0 need to be send to the bus.
Example bus communication to control the output:

10/0/3 Write 1-bit	1	=send 1 to bus
10/0/3 Write 1-bit	0	=send 0 to bus
10/0/4 Receive 1-bit	**1**	**= receive "ON" status of the output**
10/0/3 Write 1-bit	1	=send 1 to bus
10/0/3 Write 1-bit	0	=send 0 to bus
10/0/4 Receive 1-bit	**0**	**= receive "OFF" status of the output**

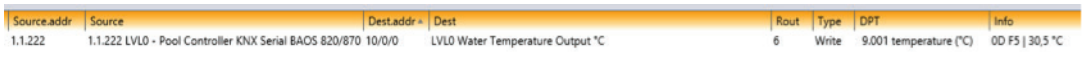
4.2.2 2-byte write and display value

Change pool mode telegram with status feedback.


Group Monitor
Start
Stop
Clear
Open
Save
Print
Replay Telegrams
Options
Autoscroll
Group Functions
Time Service Flags Prio Source.addr Source Dest.addr Dest Rout Type DPT Info
lvl0 POOL
8 2015-02-08 12:10:56.388 from bus Low 1.1.222 1.1.222 LVL0 - 10/2/13 LVL0 Pool Mode Control Output 6 Write 7.* 2-byte unsigned value 00 C8
7 2015-02-08 12:10:56.242 from bus Low 1.1.250 - 10/2/12 LVL0 Pool Mode Control Input 6 Write 7.* 2-byte unsigned value 00 C8

4.2.3 2-byte display status

Display water temperature.


Source.addr Source Dest.addr Dest Rout Type DPT Info
1.1.222 1.1.222 LVL0 - Pool Controller KNX Serial BAOS 820/870 10/0/0 LVL0 Water Temperature Output °C 6 Write 9.001 temperature (°C) 0D F5 | 30,5 °C

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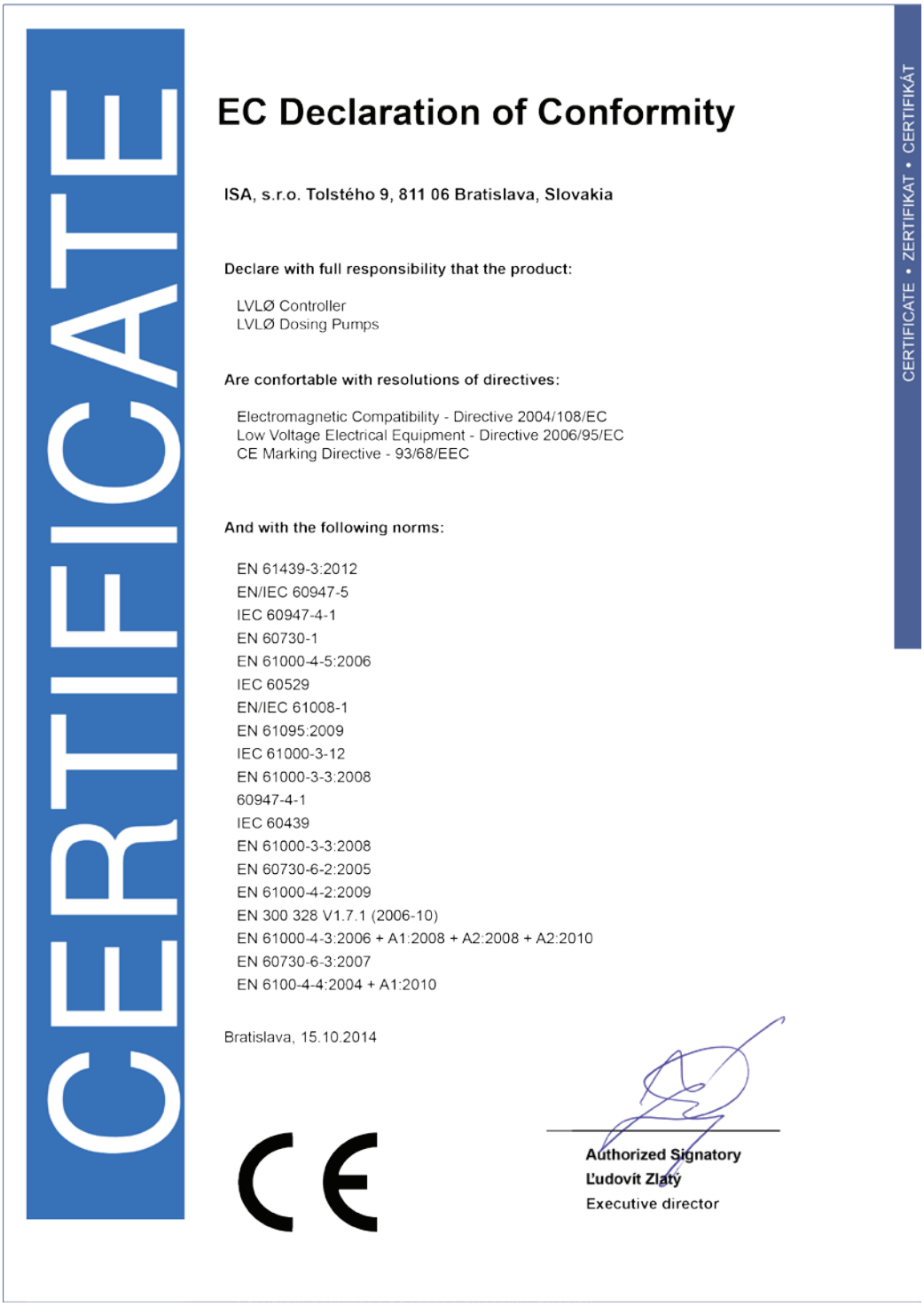
1 EC Declaration of Conformity



CERTIFICATE

CERTIFICATE • ZERTIFIKAT • CERTIFIKÁT

EC Declaration of Conformity

ISA, s.r.o. Tolstého 9, 811 06 Bratislava, Slovakia

Declare with full responsibility that the product:

LVLØ Controller
LVLØ Dosing Pumps

Are confortable with resolutions of directives:

Electromagnetic Compatibility - Directive 2004/108/EC
Low Voltage Electrical Equipment - Directive 2006/95/EC
CE Marking Directive - 93/68/EEC

And with the following norms:

EN 61439-3:2012
EN/IEC 60947-5
IEC 60947-4-1
EN 60730-1
EN 61000-4-5:2006
IEC 60529
EN/IEC 61008-1
EN 61095:2009
IEC 61000-3-12
EN 61000-3-3:2008
60947-4-1
IEC 60439
EN 61000-3-3:2008
EN 60730-6-2:2005
EN 61000-4-2:2009
EN 300 328 V1.7.1 (2006-10)
EN 61000-4-3:2006 + A1:2008 + A2:2008 + A2:2010
EN 60730-6-3:2007
EN 6100-4-4:2004 + A1:2010

Bratislava, 15.10.2014

CE

Authorized Signatory
Ľudovít Zlatý
Executive director

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